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Sequence Listing was accepted.

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Reviewer: Durreshwar Anjum

Timestamp: [year=2008; month=3; day=25; hr=13; min=13; sec=42; ms=765; ]

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Application No: 10555669 Version No: 2.0

**Input Set:**

**Output Set:**

**Started:** 2008-03-12 16:14:44.865  
**Finished:** 2008-03-12 16:14:46.330  
**Elapsed:** 0 hr(s) 0 min(s) 1 sec(s) 465 ms  
**Total Warnings:** 18  
**Total Errors:** 0  
**No. of SeqIDs Defined:** 20  
**Actual SeqID Count:** 20

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W 402	Undefined organism found in <213> in SEQ ID (5)
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W 402	Undefined organism found in <213> in SEQ ID (7)
W 402	Undefined organism found in <213> in SEQ ID (8)
W 213	Artificial or Unknown found in <213> in SEQ ID (11)
W 213	Artificial or Unknown found in <213> in SEQ ID (12)
W 213	Artificial or Unknown found in <213> in SEQ ID (13)
W 213	Artificial or Unknown found in <213> in SEQ ID (14)
W 213	Artificial or Unknown found in <213> in SEQ ID (15)
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W 213	Artificial or Unknown found in <213> in SEQ ID (18)
W 213	Artificial or Unknown found in <213> in SEQ ID (19)
W 213	Artificial or Unknown found in <213> in SEQ ID (20)



SEQUENCE LISTING

<110> WU, TZZY-CHOOU  
HUNG, CHIEN, FU

<120> ANTI-CANCER DNA VACCINE EMPLOYING PLASMIDS ENCODING  
SIGNAL SEQUENCE, MUTANT ONCOPROTEIN ANTIGEN, AND HEAT  
SHOCK PROTEIN

<130> JHV-050.01 (19546-5001)

<140> 10555669

<141> 2008-03-12

<150> PCT/US04/013756

<151> 2004-05-05

<150> 60/467,602

<151> 2003-05-05

<160> 20

<170> PatentIn Ver. 3.3

<210> 1

<211> 297

<212> DNA

<213> Human papillomavirus

<220>

<221> CDS

<222> (1)..(297)

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cca gag aca act gat ctc tac tgt tat gag caa tta aat gac agc tca 96  
Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser  
20 25 30

gag gag gag gat gaa ata gat ggt cca gct gga caa gca gaa ccg gac 144  
Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp  
35 40 45

aga gcc cat tac aat att gta acc ttt tgt tgc aag tgt gac tct acg 192  
Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr  
50 55 60

ctt cgg ttg tgc gta caa agc aca cac gta gac att cgt act ttg gaa 240  
Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu  
65 70 75 80

gac ctg tta atg ggc aca cta gga att gtg tgc ccc atc tgt tct cag 288  
Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln

85

90

95

297

gat aag ctt  
Asp Lys Leu

<210> 2  
<211> 99  
<212> PRT  
<213> Human papillomavirus

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Met His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln  
1 5 10 15

Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser  
20 25 30

Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp  
35 40 45

Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr  
50 55 60

Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu  
65 70 75 80

Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln  
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Asp Lys Leu

<210> 3  
<211> 98  
<212> PRT  
<213> Human papillomavirus

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Met His Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln  
1 5 10 15

Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser  
20 25 30

Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp  
35 40 45

Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr  
50 55 60

Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu  
65 70 75 80

Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln

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90

95

Lys Pro

<210> 4

<211> 158

<212> PRT

<213> Human papillomavirus

<400> 4

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1 5 10 15

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20 25 30

Ile Ile Leu Glu Cys Val Tyr Cys Lys Gln Gln Leu Leu Arg Arg Glu  
35 40 45

Val Tyr Asp Phe Ala Phe Arg Asp Leu Cys Ile Val Tyr Arg Asp Gly  
50 55 60

Asn Pro Tyr Ala Val Cys Asp Lys Cys Leu Lys Phe Tyr Ser Lys Ile  
65 70 75 80

Ser Glu Tyr Arg His Tyr Cys Tyr Ser Leu Tyr Gly Thr Thr Leu Glu  
85 90 95

Gln Gln Tyr Asn Lys Pro Leu Cys Asp Leu Leu Ile Arg Cys Ile Asn  
100 105 110

Cys Gln Lys Pro Leu Cys Pro Glu Glu Lys Gln Arg His Leu Asp Lys  
115 120 125

Lys Gln Arg Phe His Asn Ile Arg Gly Arg Trp Thr Gly Arg Cys Met  
130 135 140

Ser Cys Cys Arg Ser Ser Arg Thr Arg Arg Glu Thr Gln Leu  
145 150 155

<210> 5

<211> 151

<212> PRT

<213> Human papillomavirus

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1 5 10 15

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20 25 30

Cys Lys Gln Gln Leu Leu Arg Arg Glu Val Tyr Asp Phe Ala Phe Arg  
35 40 45

Asp Leu Cys Ile Val Tyr Arg Asp Gly Asn Pro Tyr Ala Val Cys Asp  
50 55 60

Lys Cys Leu Lys Phe Tyr Ser Lys Ile Ser Glu Tyr Arg His Tyr Cys  
65 70 75 80

Tyr Ser Leu Tyr Gly Thr Thr Leu Glu Gln Gln Tyr Asn Lys Pro Leu  
85 90 95

Cys Asp Leu Leu Ile Arg Cys Ile Asn Cys Gln Lys Pro Leu Cys Pro  
100 105 110

Glu Glu Lys Gln Arg His Leu Asp Lys Lys Gln Arg Phe His Asn Ile  
115 120 125

Arg Gly Arg Trp Thr Gly Arg Cys Met Ser Cys Cys Arg Ser Ser Arg  
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Thr Arg Arg Glu Thr Gln Leu  
145 150

<210> 6

<211> 378

<212> DNA

<213> Human papillomavirus

<400> 6

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tatatgttag atttgcacc agagacaact gatctctact gttatgagca attaaatgac 180  
agctcagagg aggaggatga aatagatggt ccagctggac aagcagaacc ggacagagcc 240  
cattacaata ttgttacacctt ttgttgcaggatgtacta cgcttcgggtt gtgcgtacaa 300  
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tgcccccattctt gttctcaa 378

<210> 7

<211> 127

<212> PRT

<213> Human papillomavirus

<400> 7

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1 5 10 15

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20 25 30

Gly Asp Thr Pro Thr Leu His Glu Tyr Met Leu Asp Leu Gln Pro Glu  
35 40 45

Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser Glu Glu  
50 55 60

Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg Ala

65

70

75

80

His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr Leu Arg

85

90

95

Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu Asp Leu

100

105

110

Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln Pro

115

120

125

<210> 8

<211> 90

<212> DNA

<213> Human papillomavirus

<400> 8

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<210> 9

<211> 1878

<212> DNA

<213> Mycobacterium tuberculosis

<400> 9

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gcgttcgccc gcaacggta ggtgctggtc ggccagcccc ccaagaacca ggcagtgacc 180  
aacgtcgatc gcaccgtcg ctcggtaaag cgacacatgg gcagcgactg gtccatagag 240  
attgacggca agaaatacac cgcgcggag atcagcgtcc gcattctgtat gaagctgaag 300  
cgcgacgccc aggcttaccc cggtgaggac attaccgacg cggttatcac gacgcccccc 360  
tacttcaatg acgcccagcg tcaggccacc aaggacgccc gccagatcgc cggccctcaac 420  
gtgctcgaga tcgtcaacga gcccggccgc gcccgcgtgg cctacggct cgacaaggcc 480  
gagaaggagc agcgaatctt ggttttcgac ttgggtggtg gcactttcga cgtttccctg 540  
ctggagatcg gcgagggtgt ggttgggttc cgtgccactt cgggtgacaa ccacctcgcc 600  
ggcgacgact gggaccagcg ggtcgctcgat tggctgggtg acaagttcaa gggcaccagc 660  
ggcatcgatc tgaccaagga caagatggcg atgcagcgcc tgcgggaagc cgccgagaag 720  
gcaaaagatcg agctgagttc gagtcagtcc acctcgatca acctgcctta catcaccgtc 780  
gacgcccaca agaaccgtt gtttttagac gaggcgtga cccgcgcgga gttccaacagg 840  
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cccgatgagg ttgtcgccgtt gggaggccct ctgcaggccg gcgtcctcaa gggcgagggt 1080  
aaagacgttc tgctgcttga ttttaccccg ctgagcctgg gtatcgagac caagggcgaa 1140  
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accaccgccc acgacaacca accgtcggtt cagatccagg tctatcaggg ggagcgttag 1260  
atcgccgcgc acaacaagtt gctcggttcc ttctggctga cccgcattcc gcccggccg 1320  
cgggggattc cgcagatcga ggtcactttc gacatcgacg ccaacggcat tgcacgtc 1380  
accgccaagg acaaggccac cggcaaggag aacacgatcc gaatccagga aggctcgccg 1440  
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gagaaggatcg tcaaagaaca ggcgtgaggcc gagggtggtt cgaaggatcc tgaagacacg 1620  
ctgaacaagg ttgtatcgccgc ggtggccggaa ggcgaaggccg cacttggccg atcgatatt 1680  
tcggccatca agtcggcgtt ggagaaggat cgcaggctc gggcaagcg 1740

atctacgaag cagctcaggc tgcgtcacag gccactggcg ctgcccaccc cggcggcgag 1800  
ccgggcggtg cccaccccg ctcggctgtat gacgttgtgg acgcggaggt ggtcgacgac 1860  
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<211> 625  
<212> PRT  
<213> Mycobacterium tuberculosis

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Ser Arg Thr Thr Pro Ser Ile Val Ala Phe Ala Arg Asn Gly Glu Val  
35 40 45  
  
Leu Val Gly Gln Pro Ala Lys Asn Gln Ala Val Thr Asn Val Asp Arg  
50 55 60  
  
Thr Val Arg Ser Val Lys Arg His Met Gly Ser Asp Trp Ser Ile Glu  
65 70 75 80  
  
Ile Asp Gly Lys Lys Tyr Thr Ala Pro Glu Ile Ser Ala Arg Ile Leu  
85 90 95  
  
Met Lys Leu Lys Arg Asp Ala Glu Ala Tyr Leu Gly Glu Asp Ile Thr  
100 105 110  
  
Asp Ala Val Ile Thr Thr Pro Ala Tyr Phe Asn Asp Ala Gln Arg Gln  
115 120 125  
  
Ala Thr Lys Asp Ala Gly Gln Ile Ala Gly Leu Asn Val Leu Arg Ile  
130 135 140  
  
Val Asn Glu Pro Thr Ala Ala Ala Leu Ala Tyr Gly Leu Asp Lys Gly  
145 150 155 160  
  
Glu Lys Glu Gln Arg Ile Leu Val Phe Asp Leu Gly Gly Thr Phe  
165 170 175  
  
Asp Val Ser Leu Leu Glu Ile Gly Glu Gly Val Val Glu Val Arg Ala  
180 185 190  
  
Thr Ser Gly Asp Asn His Leu Gly Gly Asp Asp Trp Asp Gln Arg Val  
195 200 205  
  
Val Asp Trp Leu Val Asp Lys Phe Lys Gly Thr Ser Gly Ile Asp Leu  
210 215 220  
  
Thr Lys Asp Lys Met Ala Met Gln Arg Leu Arg Glu Ala Ala Glu Lys  
225 230 235 240  
  
Ala Lys Ile Glu Leu Ser Ser Ser Gln Ser Thr Ser Ile Asn Leu Pro

245 250 255  
Tyr Ile Thr Val Asp Ala Asp Lys Asn Pro Leu Phe Leu Asp Glu Gln  
260 265 270  
Leu Thr Arg Ala Glu Phe Gln Arg Ile Thr Gln Asp Leu Leu Asp Arg  
275 280 285  
Thr Arg Lys Pro Phe Gln Ser Val Ile Ala Asp Thr Gly Ile Ser Val  
290 295 300  
Ser Glu Ile Asp His Val Val Leu Val Gly Gly Ser Thr Arg Met Pro  
305 310 315 320  
Ala Val Thr Asp Leu Val Lys Glu Leu Thr Gly Gly Lys Glu Pro Asn  
325 330 335  
Lys Gly Val Asn Pro Asp Glu Val Val Ala Val Gly Ala Ala Leu Gln  
340 345 350  
Ala Gly Val Leu Lys Gly Glu Val Lys Asp Val Leu Leu Asp Val  
355 360 365  
Thr Pro Leu Ser Leu Gly Ile Glu Thr Lys Gly Gly Val Met Thr Arg  
370 375 380  
Leu Ile Glu Arg Asn Thr Thr Ile Pro Thr Lys Arg Ser Glu Thr Phe  
385 390 395 400  
Thr Thr Ala Asp Asp Asn Gln Pro Ser Val Gln Ile Gln Val Tyr Gln  
405 410 415  
Gly Glu Arg Glu Ile Ala Ala His Asn Lys Leu Leu Gly Ser Phe Glu  
420 425 430  
Leu Thr Gly Ile Pro Pro Ala Pro Arg Gly Ile Pro Gln Ile Glu Val  
435 440 445  
Thr Phe Asp Ile Asp Ala Asn Gly Ile Val His Val Thr Ala Lys Asp  
450 455 460  
Lys Gly Thr Gly Lys Glu Asn Thr Ile Arg Ile Gln Glu Gly Ser Gly  
465 470 475 480  
Leu Ser Lys Glu Asp Ile Asp Arg Met Ile Lys Asp Ala Glu Ala His  
485 490 495  
Ala Glu Glu Asp Arg Lys Arg Arg Glu Glu Ala Asp Val Arg Asn Gln  
500 505 510  
Ala Glu Thr Leu Val Tyr Gln Thr Glu Lys Phe Val Lys Glu Gln Arg  
515 520 525  
Glu Ala Glu Gly Gly Ser Lys Val Pro Glu Asp Thr Leu Asn Lys Val  
530 535 540  
Asp Ala Ala Val Ala Glu Ala Lys Ala Leu Gly Gly Ser Asp Ile

545 550 555 560

Ser Ala Ile Lys Ser Ala Met Glu Lys Leu Gly Gln Glu Ser Gln Ala  
565 570 575

Leu Gly Gln Ala Ile Tyr Glu Ala Ala Gln Ala Ala Ser Gln Ala Thr  
580 585 590

Gly Ala Ala His Pro Gly Gly Glu Pro Gly Gly Ala His Pro Gly Ser  
595 600 605

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610 615 620

Lys

625

<210> 11

<211> 2104

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1) .. (2103)

<220>

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cca gag aca act gat ctc tac tgt tat gag caa tta aat gac agc tca 96  
Pro Glu Thr Thr Asp Leu Tyr Cys Tyr Glu Gln Leu Asn Asp Ser Ser  
20 25 30

gag gag gag gat gaa ata gat ggt cca gct gga caa gca gaa ccg gac 144  
Glu Glu Glu Asp Glu Ile Asp Gly Pro Ala Gly Gln Ala Glu Pro Asp  
35 40 45

aga gcc cat tac aat att gta acc ttt tgt tgc aag tgt gac tct acg 192  
Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys Asp Ser Thr  
50 55 60

ctt cgg ttg tgc gta caa agc aca cac gta gac att cgt act ttg gaa 240  
Leu Arg Leu Cys Val Gln Ser Thr His Val Asp Ile Arg Thr Leu Glu  
65 70 75 80

gac ctg tta atg ggc aca cta gga att gtg tgc ccc atc tgt tct caa 288  
Asp Leu Leu Met Gly Thr Leu Gly Ile Val Cys Pro Ile Cys Ser Gln  
85 90 95

gga